

## Find Functions: KOG

### KOG Browser

From the **Find Functions** top-level menu, the **KOG** option on the second-level menu leads to the KOG Browser, as shown in Figure 1(i). This is a two-level display with KOG function groups shown on the first level, and KOG categories listed under the corresponding function groups.

Top-level KOG function groups include:

- CELLULAR PROCESSES AND SIGNALING
- INFORMATION STORAGE AND PROCESSING
- METABOLISM
- POORLY CATEGORIZED

Clicking on any of the function groups will lead to a page showing all KOG IDs associated with this group and the corresponding isolate genome count (Figure 1(ii)). Clicking on any of the categories will lead to a page showing all KOG IDs associated with this category and the corresponding isolate genome count (Figure 1(iii)).

### KOG Browser (i)

[KOG list](#)

**CELLULAR PROCESSES AND SIGNALING**

[Cell cycle control, cell division, chromosome partitioning](#)

[Cell motility](#) [N]

[Cell wall/membrane/envelope biogenesis](#) [M]

[Cytoskeleton](#) [Z]

**Defense mechanisms** [V]

[Extracellular structures](#) [W]

[Intracellular trafficking, secretion, and vesicular transport](#)

[Nuclear structure](#) [Y]

[Posttranslational modification, protein turnover, chaperones](#)

[Signal transduction mechanisms](#) [T]

**INFORMATION STORAGE AND PROCESSING**

[Chromatin structure and dynamics](#) [B]

[RNA processing and modification](#)

[Replication, recombination and repair](#)

[Transcription](#) [K]

[Translation, ribosomal structure](#)

**METABOLISM**

### KOG Function Group (ii)

**CELLULAR PROCESSES AND SIGNALING**

**Defense mechanisms**

**hint:** The function cart allows for phylogenetic profile comparisons.

**Add Selected to Function Cart** **Select All** **Clear All**

Filter column: KOG ID Filter text Apply

Export Page 1 of 19 << first < prev 1 2 3 4 5 6 7 8 9 10 next > last >> 100

Column Selector Select Page Deselect Page

Select	KOG ID	Name	Function Code	Function Definition	Genome Count
<input type="checkbox"/>	KOG0001	Ubiquitin and ubiquitin-like proteins	O	Posttranslational modification, protein turnover, chaperones	15
<input type="checkbox"/>	KOG0005	Ubiquitin-like protein	O	Posttranslational modification, protein turnover, chaperones	146
<input type="checkbox"/>	KOG0005	Ubiquitin-like protein	D	Cell cycle control, cell division, chromosome partitioning	146

### KOG Category Details (iii)

Details for KOG Category: Defense mechanisms

**Add Selected to Function Cart** **Select All** **Clear All**

Filter column: KOG ID Filter text Apply

Export Page 1 of 1 << first < prev 1 next > last >> All

Column Selector Select Page Deselect Page

Select	KOG ID	KOG Name	Isolate Genome Count
<input type="checkbox"/>	KOG0624	dsRNA-activated protein kinase inhibitor P58, contains TPR and DnaJ domains	198
<input type="checkbox"/>	KOG1047	Bifunctional leukotriene A4 hydrolase/aminopeptidase LTA4H	2610
<input type="checkbox"/>	KOG1216	von Willebrand factor and related coagulation proteins	23
<input type="checkbox"/>	KOG1388	Attractin and platelet-activating factor acetylhydrolase	970

**Figure 1. KOG Browser.**

Users can select any subset of listed KOG IDs to be saved to Function Cart or Workspace Function Set for further analysis.

Each KOG ID is linked to its NCBI definition page such as:

<https://www.ncbi.nlm.nih.gov/Structure/cdd/cddsrv.cgi?uid=KOG0624>

Users can also click on a genome count to view all isolate genomes having genes associated with a particular KOG ID. For example, Figure 2(ii) lists all isolate genomes having genes annotated with KOG0624.

Clicking on a gene count will lead to a page listing the actual genes.

Conserved Protein Domain Family

KOG0624

(ii)

HOME

SEARCH

SITE MAP

Entrez

CDD

Structure

Protein

KOG0624: KOG0624

KOG0624, dsRNA-activated protein kinase inhibitor P58, contains TPR and DnaJ domains [Defense mechanisms]

Links

Statistics

Structure

KOG0624 is not assigned to a

Sequence Alignment

Reformat

Format: [Hypertext]

Row Display: [All 4 rows]

Color Bits: [2.0 bit]

q1 5453980

1

MVAPGVTIRLGS-----VFPLVLVDLQYEGAGGVN-ADVEKHLGKLLAAGG

q1 7299214

1

MLPLSLDLINIGGgekkIAACLVLLLELPLEGAE3TApadIENHLELQPEFLARQG

q1 17551190

1

-----sHTVGMELIIRKSLFASFPAGTAREVAMKELQSGFLARAG

q1 17510335

1

-----MGTSLVILLSCFEFIYSLDKTEAQRXEAGNALFVVRGQ

KOG Category Details

(i)

Details for KOG Category: *Defense mechanisms*

Add Selected to Function Cart

Select All

Filter column: KOG ID

Filter text

Export

Page 1 of 1

<< first

< prev

1

next >

last >>

All

Column Selector

Select Page

Deselect Page

Select	KOG ID	KOG Name	Isolate Genome Count
<input type="checkbox"/>	KOG0624	dsRNA-activated protein kinase inhibitor P58, contains TPR and DnaJ domains	198
<input type="checkbox"/>	KOG1047	Bifunctional leukotriene A4 hydrolase/aminopeptidase LTA4H	2610
<input type="checkbox"/>	KOG1216	von Willebrand factor and related coagulation proteins	23

Isolate Genomes with KOG0624

(iii)

Genomes with dsRNA-activated protein kinase inhibitor P58, contains TPR and DnaJ domains

Phylogenetic Distribution

Domains(D): \* = Microbiome,

B = Bacteria, A = Archaea, E = Eukarya, P = Plasmids, G = GFragment, V = Viruses.

Genome Completion(C): F = Finished, P = Permanent Draft, D = Draft.

Add Selected to Genome Cart

Select All

Clear All

Filter column: Domain

Filter text

Apply

Export

Page 1 of 2

<< first

< prev

1

next >

last >>

100

Column Selector

Select Page

Deselect Page

Select	Domain	Status	Genome	Gene Count
<input type="checkbox"/>	B	D	<a href="#">Xanthobacter tagetidis C132 (Draft 1 Xanthobacter tagetidis C132)</a>	1
<input type="checkbox"/>	B	P	<a href="#">Pseudoalteromonas sp. 520P1</a>	1
<input type="checkbox"/>	B	P	<a href="#">Nitrospina gracilis 3/211</a>	1
<input type="checkbox"/>	B	P	<a href="#">Alteromonadaceae bacterium 2753L_S.0a.02</a>	1

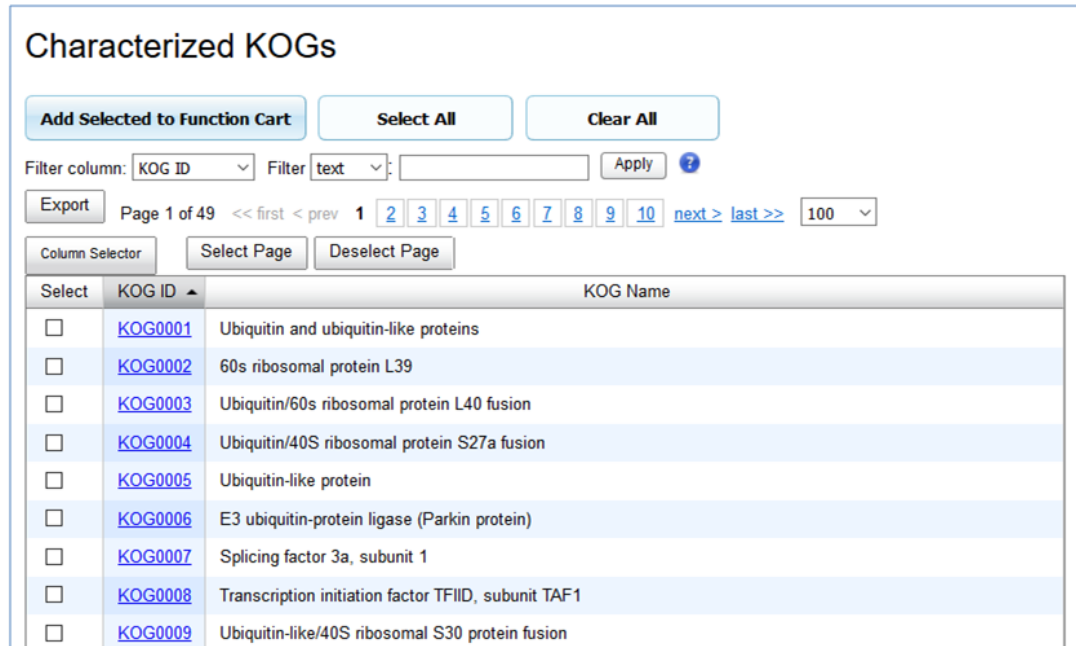
**Figure 2.** KOG0624 Detail and Associated Genomes.

## KOG List

The **KOG List** option shows all KOG IDs in a table display (Figure 3).

Users can select a subset of KOG IDs to be added to Function Cart or Workspace for further analysis.

Clicking on a KOG ID will lead to NCBI KOG detail page as shown in Figure 2(ii).



The screenshot displays the 'Characterized KOGs' interface. At the top, there are three buttons: 'Add Selected to Function Cart', 'Select All', and 'Clear All'. Below these is a filter section with 'Filter column:' set to 'KOG ID', a 'Filter' dropdown set to 'text', and an 'Apply' button. A pagination bar shows 'Page 1 of 49' with navigation links for first, previous, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, next, last, and a page size dropdown set to 100. Below the pagination are 'Column Selector', 'Select Page', and 'Deselect Page' buttons. The main table has two columns: 'Select' and 'KOG ID', and a third column for 'KOG Name'. The table lists nine KOGs, each with a checkbox in the 'Select' column and a link to the KOG ID in the 'KOG ID' column.

Select	KOG ID	KOG Name
<input type="checkbox"/>	<a href="#">KOG0001</a>	Ubiquitin and ubiquitin-like proteins
<input type="checkbox"/>	<a href="#">KOG0002</a>	60s ribosomal protein L39
<input type="checkbox"/>	<a href="#">KOG0003</a>	Ubiquitin/60s ribosomal protein L40 fusion
<input type="checkbox"/>	<a href="#">KOG0004</a>	Ubiquitin/40S ribosomal protein S27a fusion
<input type="checkbox"/>	<a href="#">KOG0005</a>	Ubiquitin-like protein
<input type="checkbox"/>	<a href="#">KOG0006</a>	E3 ubiquitin-protein ligase (Parkin protein)
<input type="checkbox"/>	<a href="#">KOG0007</a>	Splicing factor 3a, subunit 1
<input type="checkbox"/>	<a href="#">KOG0008</a>	Transcription initiation factor TFIIID, subunit TAF1
<input type="checkbox"/>	<a href="#">KOG0009</a>	Ubiquitin-like/40S ribosomal S30 protein fusion

**Figure 3.** KOG List.

## KOG List w/ Stats

This option is similar to KOG List except that there are additional genome counts.